

Acknowledgements

We acknowledge Gina Intriligator and Gail Bamber of the San Diego Supercomputer Center for their graphic design contributions. The BioSync web resource is a part of the National Biomedical Computation Resource (P41 RR08605-08), an NIH National Center for Research Resources center hosted at the San Diego Supercomputer Center on the campus of the University of California, San Diego. The following authors of this paper are members of the Research Collaboratory for Structural Bioinformatics (RCSB), which operates the Protein Data Bank (PDB): Ward Fleri, Wolfgang F. Bluhm, John Westbrook and Philip E. Bourne. The PDB is supported by funds from the American National Science Foundation, the Dept of Energy and two units of the National Institutes of Health: the National Institute of General Medical

Sciences and the National Library of Medicine.

References

- 1 Norvell, J.C. and Machalek, A.Z. (2000) Structural genomics programs at the US National Institute of General Medical Sciences. *Nat. Struct. Biol.* 7, 931
- 2 George, G.N. *et al.* (1998) An edge with XAS. *Nat. Struct. Biol.* 5, 645–647
- 3 Irving, T.C. (1998) Bright prospects for biological non-crystalline diffraction. *Nat. Struct. Biol.* 5, 648–650
- 4 Mitchell, E. *et al.* (1999) Demystifying the synchrotron trip: a first time user's guide. *Struct. Fold. Des.* 7, R111–R121
- 5 Westbrook, J.D. and Bourne, P.E. (2000) STAR/mmCIF: an ontology for macromolecular structure. *Bioinformatics* 16, 159–168
- 6 Bourne, P.E. *et al.* (1997) Macromolecular crystallographic information file. *Methods Enzymol.* 277, 571–590
- 7 Berman, H.M. *et al.* (2000) The Protein Data Bank and the challenge of structural genomics. *Nat. Struct. Biol.* 7, 957–959

Anne Kuller

Ward Fleri

Wolfgang F. Bluhm

San Diego Supercomputer Center, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0505, USA.

Janet L. Smith

Dept of Biological Sciences, Purdue University, West Lafayette, IN 47907-1392, USA.

John Westbrook

Dept of Chemistry, Rutgers University, 610 Taylor Road, Piscataway, NJ 08854-8087, USA.

Philip E. Bourne

Dept of Pharmacology, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0505, USA.
e-mail: bourne@sdsc.edu

Book Review

Making sense of structural biology

The Structures of Life

edited by Alisa Zapp Machalek
National Institutes of Health (NIH) and
National Institute of General Medical
Sciences, 2001. Free download of pdf from
<http://www.nigms.nih.gov/news/publist.html>
(60 pages) NIH publication number 01 2778

Timely with the commencement of funding for the first seven (now nine) P-50 Centers for Structural Genomics last year, the National Institute of General Medical Sciences (NIGMS) has released a booklet entitled *The Structures of Life*. The NIGMS provides a substantial collection of informative booklets and brochures to educate the public about research areas receiving funding. The publications are available free of charge and can be requested from their website at <http://www.nigms.nih.gov/news/publist.html>. Although all the NIGMS booklets are informative, *The Structures of Life*, one of the more substantial publications with 60 pages, is probably one of the best.

The Structures of Life, written by Alisa Zapp Machalek (an active staff writer for the NIGMS since 1995) presents a comprehensible introduction

to structural biology without condescending oversimplification, which is often a trademark of texts aiming to educate the public. In fact, *The Structures of Life* covers an impressive amount of information, and I found it a great help in exciting my colleagues, even those with a strict biochemistry or genetics background, about structural biology. Structural biology is probably one of the more expensive and laborious endeavors in the biosciences, and we are well served with a publication demonstrating the value of molecular structures in contemporary, human-health-related research. Machalek accomplishes this task by interspersing clear descriptions of proteins, their structures and structural determination methods, with timely applications to health-related research, such as the development of HIV therapeutics or novel pain killers that block the COX-2 cyclooxygenase. By relating health concerns and well-known pharmaceutical trade names with short biographies of students excited about their structural work, *The Structures of Life* could help attract young people to the field; influx of new talent is certainly needed considering the rapid expansion of structure-based biomedical research.

In addition to well-selected content, *The Structures of Life* has appealing layout and graphics, which puts several

textbooks (not to speak of scientific journals) to shame. High quality graphics are satisfyingly informative, and a few cartoons provide relief from the seriousness of the subject matter. I was hard pressed to find any gross oversimplifications or inaccuracies (which tend to plague texts addressing non-specialists) in this booklet. One could take issue with the statement that 'Alpha helices are spirals' – even the non-specialist might relate, for example, to 'cork screws', which is more accurate in a mathematical sense.

In summary, *The Structures of Life* is an excellent resource for advertising structure-related biomedical research. I certainly recommend this booklet for those wishing to excite undergraduate students, to educate their scientific co-workers, and to show non-specialist and laypersons why structural biology is such an important field of biomedical research with direct and tangible effects on all our lives.

Bernhard Rupp

Macromolecular Crystallography and
Structural Genomics Group, LLNL*-BBRP,
POB 808, Livermore, CA 94551, USA.
e-mail: br@llnl.gov

*Lawrence Livermore National Laboratory is operated by the University of California for the US Dept of Energy under contract number W-7405-Eng-48.